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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/760,614   | 01/20/2004  | Torbjorn Randahl     | 1406/179            | 9961             |
| 25297  | 7590        | 11/17/2005           | EXAMINER            |                  |
| JENKINS, WILSON & TAYLOR, P. A.<br>3100 TOWER BLVD<br>SUITE 1400<br>DURHAM, NC 27707 |             |                      | NGUYEN, LINH V      |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2819                |                  |

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/760,614

Applicant(s)

RANDAHL ET AL.

Examiner

Linh V. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

1. This office action is in response to communication filed on 9/29/05 Claims 1 - 14 pending on this application.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1 and 13 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 4, and 11 - 14 are rejected under 35 U.S.C. 102(a) and 102(e) as being anticipated by Sawashi U.S. Patent No. 6,653,897.

Regarding claim 1, Fig. 3 of Sawashi discloses a line driver arrangement comprising: a class-D switching amplifier (Col. 3 lines 10 – 18) having a switching frequency (Col. 2 line 65 – Col.3 lines 9), said class-D amplifier receiving an input transmit signal (11) and outputting an amplified transmit signal (P33); a transformer (34) having a predetermined leakage inductance (Col. 3 lines 26 - 30) for receiving the

amplified transmit signal (P33) and outputting a transformed signal (output of 34) as an output transmit signal; wherein the leakage inductance predetermined for low pass filtering of the amplified transmit signal (Col. 3 lines 46 - 52).

Regarding claim 3, wherein the signals are dual line signals P32), the class-D amplifier (33) and the transformer (34) each have two input terminals and two output terminals and are connected in series through a dual line (32).

Regarding claim 4, wherein the dual lines signals being discrete multitone (14) modulated signal (P32).

Regarding claim 11, Sawashi as applied to claim 1 above does not employed the dual line driver (3) of his is part of an ADSL transceiver. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employ does not differentiate the claimed apparatus from prior art apparatus satisfying the claimed structural limitations.

Regarding claim 12, wherein the line driver (Fig. 3) arrangement further comprises resistances and/or inductances (14).

Regarding claim 13, Fig. 3 of Sawashi discloses a transformer (34) for use in a line driver arrangement (Fig. 3), said line driver arrangement comprising an amplifier (32,) for receiving an input transmit signal (P31) and outputting an amplified transmit signal (P33) and wherein the transformer (34) has a predetermined leakage inductance and/or stray capacitance (Col. 3 lines 45 - 47), and the leakage inductance (Col. 3 lines 26 - 30 and/or stray capacitance (35) is predetermined for low pass filtering of the amplified transmit signal (Col. 3 lines 46 - 52).

Regarding claim 14, wherein the amplifier is a class-D switching amplifier (having a switching frequency (Col. 2 line 65 – Col.3 lines 9)).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawashi as applied to claims 1, and further in view of Siao U.S. Patent No. 6,091,206.

Sawashi as applied to claim 1 above, does not disclose one two capacitances are connected in series between the two lines between the class-D amplifier and the transformer, and wherein a node between the two capacitances is connected to a reference voltage.

Fig. 1 of Siao discloses a class D line driver having two capacitances (C1, C2) is connected in series between the two lines between the class-D amplifier and the transformer, and wherein a node between the two capacitances is connected to a reference voltage (Ground potential).

Sawashi and Siao are common subject matter for class D driver. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Siao into Sawashi for the purpose of

determine the operating frequency range and also serve to protect the switching transistors by providing AC impedance when subject to high frequency transient signals or voltage spikes (Siao, page 2 line 64 – page 3 line 5).

7. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawashi as applied to claims 1, and further in view of Schrott et al. U.S. Patent No. 6,535,108.

Sawashi as applied to claim 1 above, does not explicitly disclose the leakage inductance (Col. 3 lines 46 – 47) or capacitance (35C) is predetermined at a minimum resonance frequency.

Col. 1 lines 21 – 25 of Schrott et al. discloses a resonant circuit having inductance L, capacitance C, resistance values are chosen such that the resonant circuit is a minimum at a resonant frequency.

Sawashi and Schrott et al. are common subject matter for LC filter circuit. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the LC circuit of Sawashi having selected values at a minimum resonant frequency for the purpose of reproduce an audio signal the from a low frequency.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawashi as applied to claims 1 above, and further in view of Ramage et al. Pub.No.: 2003/0095000.

Fig. 3 of Sawashi as applied to claim 1 above, does not disclose a low pass filter is coupled between the class D amplifier (33) and the transformer (34) of his.

Fig. 1 of Ramage et al. discloses a low pass filter (22,23,26,27) is coupled between class D amplifier (20, 21) and the transformer (30).

Sawashi and Ramage et al. are common subject matter for class D amplifier. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated the low pass filter taught by Ramage et al. into Sawashi for the purpose of providing appropriated audio frequency signal to the human ear.

9. Claim 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawashi as applied to claims 1 above, and further in view of Applicant Admitted Prior Art (AAPA).

Coleman et al. as applied to claims 1 above, does not explicitly disclose the line driver (Fig. 1) of his having a power spectral density that complies with ADSL standard.

AAPA, under Background, on page 1 lines 5 – 7, and on page 2 lines 1 – 24, discloses a line driver arrangement utilizing class D power amplifier having a power spectral density that complies with ADSL standard.

Sawashi and AAPA are common subject matter for line driver arrangement utilizing class D amplifier. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated the teaching class D of AAPA into Class D of Sawashi for the purpose of fulfill certain requirements of ADSL

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standard of line driver (AAPA, page 2 lines 1 – 5) and providing a guidelines for design and implementation of a DSS technology (AAPA, page 2, lines 23- 24).

10. Claim 7 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawashi modified by Siao as applied to claim 5 above, and further in view of Miyajima et al. Pub. No.: 2003/0042801.

Ramage as applied to claim 5 above does not explicitly disclose the low pass filter (22, 23, 26, 27 in Fig. 1) of his having a cutoff frequency that is lower than the resonance frequency.

Paragraph [0109] of Miyajima et al. teaches the low pass filter having a cutoff frequency that is lower than the resonance frequency.

Ramage et al. and Miyajima et al. are common subject matter for low pass filter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporated the low pass filter of Miyajima into Ramage for the purpose of preventing the ripple output (Miyajima, paragraph 0019).

### ***Prior Art***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



**Contact Information**

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh Van Nguyen whose telephone number is (571) 272-1810. The examiner can normally be reached from 8:30 – 5:00 Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Rexford Barnie can be reached at (571) 272-7492. The fax phone numbers for the organization where this application or proceeding is assigned are (571-273-8300) for regular communications and (571-273-8300) for After Final communications.

11/9/05

Linh Van Nguyen

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A handwritten signature in black ink, appearing to read 'Linh Van Nguyen', is written over the typed name.